

# The Central European Hallodapini: Studies of the female genitalia (Heteroptera, Phylinae, Miridae)<sup>1</sup>

D. WYNIGER

**Abstract:** For the ten species of Central European Hallodapini diagnoses, illustrations of the female genitalia, identification key to the females and photographs of the females and males are provided.

**Key words:** *Cremonocephalus*, female genitalia, *Haldodapus*, *Mimocoris*, *Omphalonotus*, *Systellonotus*.

## Introduction

The phyline tribe Hallodapini, contains 49 genera predominantly distributed in the Old World. A single genus, viz. *Cyrtopeltocoris* REUTER 1876, occurs in North America. Ten species are recorded from Central Europe (GÜNTHER & SCHUSTER 2000). Most female, as well as some male, Hallodapini are brachypterous with the females of some species known for their especially strikingly myrmecomorphic habitus (Figs 1-2). The male genitalia includes vesicae that are typical phyline (e.g., WAGNER 1941, 1948, 1974; SCHUH 1974, 1984; LINNAUORI 1996; MAGNIEN 2000; WYNIGER 2006). EHANNO (1990) and MAGNIEN (2000) discussed a particular character in the female genitalia: the ventral sack of the bursa copulatrix (sensu Ehanno). EHANNO (1990) investigated several Hallodapini species, whereas MAGNIEN (2000) examined all the species of *Cremonocephalus* FIEBER 1860 plus *Mimocoris coarctatus* (MULSANT & REY 1852) and *Alloeomimus unifasciatus* (REUTER 1879). All of these species have a more or less sclerotized ventral sack. MAGNIEN (2000) considered the ventral sack a diagnostic character for the Hallodapini.

The ventral sack is an internal extension of the vestibulum with a great diversity of shape and size within the Hallodapini. The ventral sack, along with the other genitalic characters, shows species specific variation in the Hallodapini (Figs 3A-4F). The species of *Cremonocephalus* have the most voluminous and sclerotized ventral sack of all the Central European Hallodapini examined (Figs 3A-3B).

A comprehensive examination of the female genitalia of the Central European Hallodapini species has never been prepared. MAGNIEN (2000) provided the only detailed study on the female genitalic structure of a Hallodapini genus. The male genitalic structure of all the species of Central European Hallodapini species was documented by WYNIGER (2006). The specimens examined herein were included in WYNIGER (2006), only additional specimens are listed in this present work. The genitalia of both sexes of all the Central European Hallodapini species are documented when this present study and WYNIGER (2006) are considered as a whole.

<sup>1</sup> I met Ernst Heiss for the first time at a meeting of the Central European Heteropterist's Society. It was very stimulating to meet him and discuss my various "bug world" projects. He encouraged me to continue my work and to believe in what I am doing. Ernst Heiss is not only a great Heteropterist with an enormous knowledge of Heteroptera, but also a wonderful person who is interested in the thoughts and ideas of young Heteropterists, who are trying to find their place in the scientific world. I want to thank him for all his encouragement, motivation, and good discussions. It is an honour to be part of the Festschrift for his 70<sup>th</sup> birthday.

### Key to the females of *Hallopapini* species from Central Europe

1 Clavus with distinct pale bands parallel to all claval margins; ventral sack of bursa copulatrix elongate vertically and distinctly sclerotized (Figs 3A-3B) ..... 2

– Clavus with pale band at lateral claval margin or with transverse pale band; ventral sack of bursa copulatrix not distinctly elongate and slightly sclerotized ..... 3

2 Ventral sack kidney-shaped (Fig. 3A); sclerotized rings of dorsal labiate plate pointed apically ..... *Cremnocephalus albolineatus* REUTER 1875

– Ventral sack elongate and curved (Fig. 3B); sclerotized rings of dorsal labiate plate elongate and distinctly pointed apically ..... *C. alpestris* WAGNER 1941

3 Clavus with pale band at lateral claval margin ..... 4

– Clavus with transverse pale band ..... 6

4 Hemelytra pale brown or orange-brown; pronotum slightly campanulate; sclerotized rings of dorsal labiate plate circular or triangular, rounded apically; ventral sack rounded ..... 5

– Hemelytra bright yellow (Figs 1J, 1K); pronotum more trapezoid; sclerotized rings of dorsal labiate plate elongate, distinctly pointed apically; ventral sack more elongate vertically (Fig. 4A) ..... *Hallopapus suturalis* (HERRICH-SCHAEFFER 1837)

5 Sclerotized rings of dorsal labiate plate triangular; dorsal labiate plate sclerotized laterally; posterior wall with bifurcate interramal sclerite (Fig. 3C) ..... *H. montandoni* REUTER 1895

– Sclerotized rings of dorsal labiate plate rounded; sclerotized bands on ventral labiate plate (Fig. 3D); posterior wall with interramal sclerite and spinose field on surface (Fig. 3D) ..... *H. rufescens* (BURMEISTER 1835)

6 Transverse pale claval band lunate or not reaching claval commissure; sclerotized rings of dorsal labiate plate either circular or slightly triangular ..... 7

– Transverse pale claval band collar-like (Figs 1L, 1M); sclerotized rings of dorsal labiate plate narrow and elongate, distinctly pointed apically; ventral labiate plate with sclerotized vertical band medially (Fig. 4B) ..... *Mimocoris rugicollis* (A. COSTA 1853)

7 Hemelytra with more or less distinct orange transverse band (Fig. 2); female strikingly ant-like (Figs 2A, 2C, 2D, 2F, 2G); lateral oviduct voluminous (Figs 4D, 4E, 4F) ..... 8

– Hemelytra black with ivory spots apically and basally (Figs 1N, 1O, 1P); brachypterous females not strikingly ant-like (Fig. 1N); lateral oviduct not voluminous; dorsal labiate plate sclerotized laterally (Fig. 4C) ..... *Omphalonotus quadriguttatus* (KIRSCHBAUM 1856)

8 Sclerotized rings of dorsal labiate plate circular, auricle-like apically (Fig. 4D, arrow); posterior wall with lunate spinose field on surface (Fig. 4D) ..... *Systellonotus alpinus* FREY-GESSNER 1871

– Sclerotized rings of dorsal labiate plate more triangular, pointed apically (Figs 4E, 4F); spinose field on surface of posterior wall not lunate (Figs 4E, 4F) ..... 9

9 Hemelytra dark brown with distinct transverse pale triangular band (Figs 2C, 2E); ventral sack lunar-like (Fig. 4E) ..... *S. discoidalis* HORVÁTH 1894

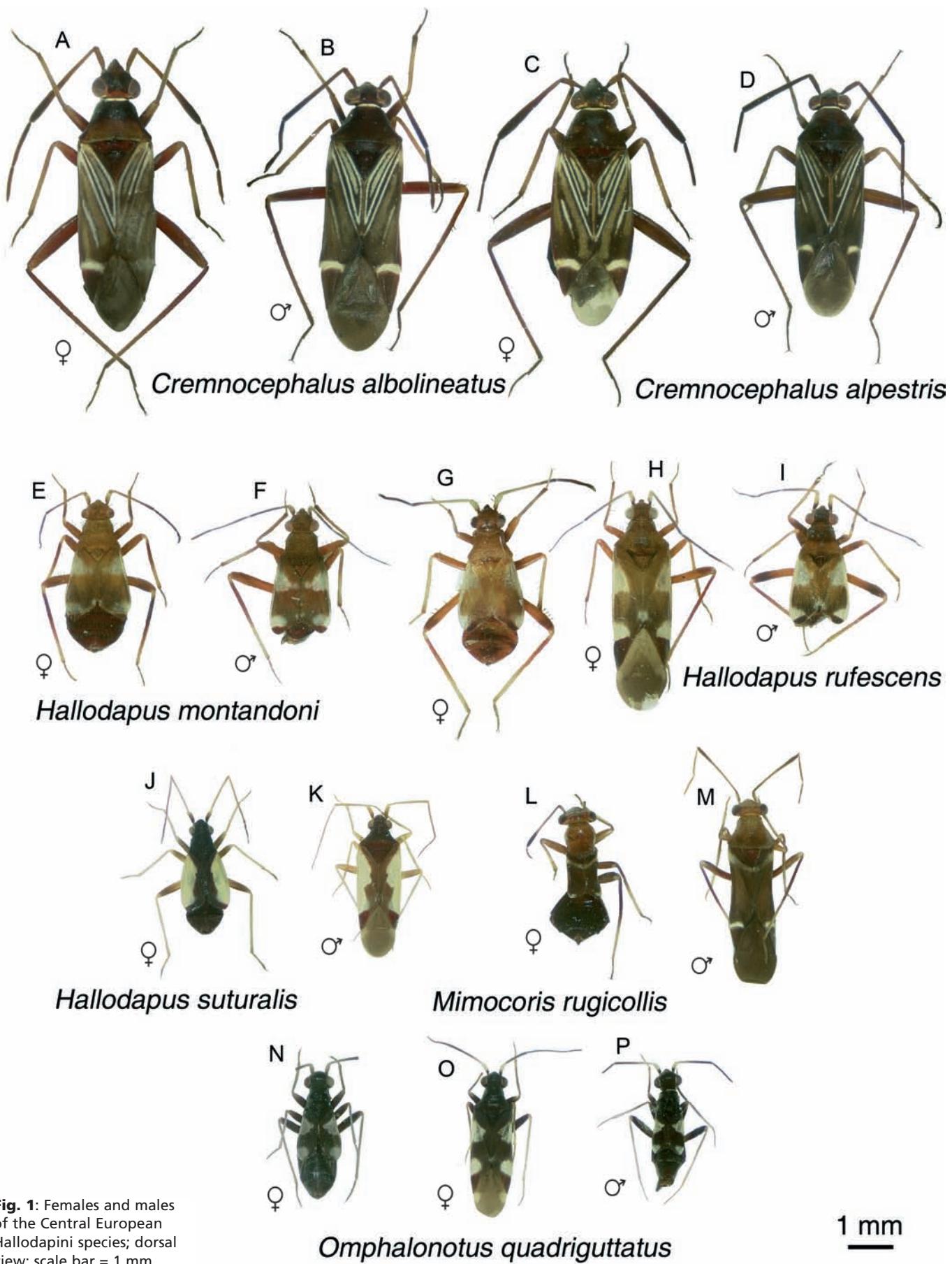
– Hemelytra pale brown, or orange-brown (Figs 2F, 2H); ventral sack vertically elongate (Fig. 4F); posterior wall with sclerotized triangular plates laterally (Fig. 4F) ..... *S. triguttatus* (LINNAEUS 1767)

### Depositories

ETHZ ..... Eidgenössische Technische Hochschule, Zürich, Switzerland

MHNG ..... Muséum d'histoire naturelle, Genève, Switzerland

NNMC ..... Moravian Museum, Brno, Czech Republic



**Fig. 1:** Females and males of the Central European Hallodapini species; dorsal view; scale bar = 1 mm.

*Cremnocephalus albolineatus* REUTER  
1875 (Figs 1A, 1B, 3A)

Diagnosis: Female and male macropterous; hemelytra brown with beige bands along veins; clavus brown with pale narrow bands parallel to all claval margins (Figs 1A, 1B); pale narrow angle formed by longitudinal bands reaching to apex of clavus; cuneus red-brown with lunate pale transverse band basally; lateral margins of pronotum slightly convex (Figs 1A, 1B); female genitalia with kidney-shaped ventral sack (Fig. 3A); sclerotized rings of dorsal labiate plate elongate and pointed; posterior wall with bifurcate interramal sclerite (Fig. 3A). Distinguished from *C. alpestris* (Figs 1C, 1D) by sclerotized rings of dorsal labiate plate not as elongate apically (Figs 3A, 3B) and by ventral sack kidney-shaped (Fig. 3A) and not as elongate as in *C. alpestris* (Fig. 3B). RIEGER (1983) and MAGNIEN (2000) provided detailed studies of *Cremnocephalus*.

Material: **Moravia:** Zblovice, 2.vii.1969, leg. Pospíšilová, 1♀ (NNMC). Lomice (Tišnov) step, 2.vii.1970, leg. Pospíšilová, 1♀ (NNMC). Žerutky, 30.vii.1965, leg. Pospíšilová, 1♀ (NNMC). **Slovakia:** Rakúsy, 700m, 7.viii.1967, leg. J.L. Stehlík, 1♀ (NNMC).

*Cremnocephalus alpestris*  
WAGNER 1941 (Figs 1C, 1D, 3B)

Diagnosis: Female and male macropterous; most similar to *C. albolineatus* (Figs 1A, 1B) in shape, coloration, and female genitalia, but distinguished by sclerotized rings of dorsal labiate plate distinctly elongate apically (Fig. 3B) and by ventral sack of female genitalia distinctly elongate and curved (Fig. 3B). Additionally the angle formed by longitudinal pale bands of the clavus does not reach over more than 3/4 of claval commissure (Figs 1C, 1D), compared to *C. albolineatus*, where it reaches to apex of clavus (Figs 1A, 1B).

Material: **Moravia:** Závist (Blansko), 4.vii.1963, leg. P. Lauterer, 1♀ (NNMC). Stolečný vrch, 19.vii.1963, leg. J.L. Stehlík, 1♀ (NNMC). **Slovakia:** Makov 16.vii.1964, leg. Pospíšilová, 4♀♀ (NNMC). Bumbálka, 15.vii.1964, leg. J.L. Stehlík, 4♀♀ (NNMC). Kolárovice - Škoruby, 17.vii.1964, leg. J.L. Stehlík, 1♀ (NNMC).

*Hallobanus montandoni* REUTER 1895  
(Figs 1E, 1F, 3C)

Diagnosis: Female, as well as male, macropterous or brachypterous; hemelytra pale brown or orange-brown with indistinct pale transverse bands apically and basally; general aspect matt; cuneus red-brown; pronotum slightly campanulate; female genitalia with roundish ventral sack (Fig. 3C); dorsal labiate plate sclerotized laterally; sclerotized rings of dorsal labiate plate triangular; posterior wall with bifurcate interramal sclerite (Fig. 3C). Most similar to *H. rufescens* (Figs 1G, 1H, 1I) in size, shape, and coloration, as well as female genitalia, but distinguished by its general aspect more matt and sclerotized rings of dorsal labiate plate more triangular (Fig. 3C).

Material: **Germany:** Bamberg, Hallstadt, Börsting, 16. u. 19.vii.1952, 1♀, 23.vi.1954, 18.vi.ii.1954, 2♀♀, 4.vii.1956, 2♀♀, 27.vi.1956, 1♀, leg. Eckerlein (MHNG). Bamberg Umgebung, 4.vii.1956, 1♀, leg. Eckerlein (MHNG). Fr. Jura, Staffelstein, 6.vii.1957, leg. Eckerlein, 2♀♀ (MHNG). **Moravia:** Horné Príbelce, okoli hřbitová, 300-350m, 24.viii.1988, leg. P. Lauterer, 1♀ (NNMC). Kamenín, 6.vi.1960, leg. J.L. Stehlík, 1♀, 1♂ (NNMC). Sedlec, 6.vii.1959, leg. J.L. Stehlík, 1♀ (NNMC). Oblekovice, 250-270m, 11.viii.1976, leg. J.L. Stehlík, 6♀♀, 3♂♂ (NNMC). Dyje, 220-240m, stepní strány, 5.vii.1976, leg. J.L. Stehlík, 1♂ (NNMC). **Slovakia:** Domica Čertova diera, 350-450m, 6.vii.1976, leg. P. Lauterer, 1♂ (NNMC).

*Hallobanus rufescens*  
(BURMEISTER 1835) (Figs 1G, 1H, 1I, 3D)

Diagnosis: Female, as well as male, macropterous or brachypterous; most similar to *H. montandoni* (Figs 1E, 1F) in size, shape, and coloration, but distinguished by general aspect shiny (Figs 1G, 1H, 1I); cuneus red-brown; sclerotized rings of dorsal labiate plate rounded (Fig. 3D) and not triangular as in *H. montandoni* (Fig. 3C), posterior wall with interramal sclerite and spinose field on surface (Fig. 3D), and further by sclerotized bands on ventral labiate surface (Fig. 3D).

Material: **Germany:** Kleinsaubernitz, Oberlausnitz, 15.vii.1958, 5♀♀, 17.vii.1955, 2♀♀, 18.vii.1955, 1♀, leg. Jordan (MHNG); Aschaffenburg, 1.vii.1934, leg. K. Singer, 1♀ (MHNG). **Moravia:** Jedovnice, "Kombut", 25.vii.1983, leg. J.L. Stehlík, 1♀ (NNMC). Pavlov-Buková, 4.vii.1963, leg. P. Lauterer, 2♂♂ (NNMC).

***Hallobapus suturalis* (HERRICH-SCHAFFER 1837) (Figs 1J, 1K, 4A)**

Diagnosis: Female brachypterous, male macropterous; hemelytra bright yellow with brown spot between medial fracture and claval suture reaching base of cuneus (Fig. 1J, 1K); cuneus reddish; pronotum trapezoid; sclerotized rings of dorsal labiate plate elongate, distinctly pointed apically (Fig. 4A); ventral sack more vertically elongate; posterior wall with bifurcate interramal sclerite (Fig. 4A). Recognized by its bright yellow hemelytra coloration (Fig. 1J, 1K) and the shape of ventral sack (Fig. 4A).

Material: **Algeria:** Qu argla, 27.iv.1964, on *Aeluropus littoralis* (GOUAR.) Part., leg. Eckerlein 9♀, 1♂, (MHNG). **Bulgaria:** Sandanski (Liljanovo), 400-450m, NW slopes, 10.viii.1972, leg. P. Lauterer, 1♀ (NNMC). **Moravia:** Vacenovice - p'sky, 215m, 21.viii.1974, leg. Pospíšilová, 1♀ (NNMC). **Slovakia:** Cenkov (Štúrovo), 30.vii.1958, 1♀, 13.viii.1958, 1♀, 28.viii.1958, 2♀, leg. O. Štěpanovičová (NNMC). Cenkov, 15.vii.1958, 1♀, 16.vii.1958, 1♀, 30.vi.1960, 2♀, leg. J.L. Stehlík; 30.vi.1969, leg. I. Tešová, 2♀, (NNMC). Chotín, 13.viii.1964, I. Tešová, 1♀ (NNMC). Malacky, Čiroká, 4.vi.1969, leg. P. Lauterer, 1♀ (NNMC).

***Mimocoris rugicollis* (A. COSTA 1853) (Figs 1L, 1M, 4B)**

Diagnosis: Female brachypterous and distinctly ant-like, males macropterous; hemelytra brown with transverse pale claval band forming with a pale collar-like band basally (Fig. 1L, 1M); head and pronotum pale orange; sclerotized rings of dorsal labiate plate narrow and elongate, distinctly pointed (Fig. 4B); ventral labiate plate with sclerotized vertical band medially; ventral sack like narrow vertical tube; posterior wall with bifurcate interramal sclerite (Fig. 4B). Recognized by female distinctly ant-like (Fig. 1L), its pale orange head and pronotum, and further by hemelytra with collar-like transverse band basally (Fig. 1L, 1M) and ventral sack of female genitalia tube-like (Fig. 4B).

Material: **Bulgaria:** Blalasiza bei Petritsch, 400m, 22.vi.1960, leg. M. Josifov, 2♀ (MHNG). **Cyprus:** Sand dunes near Amathus, 22.vi.1965, 2♀, leg. Mavromoustakis (MHNG). **Dalmatia:** Kastell Luksic, 20.vii.1954, leg. Eckerlein, 4♀ (MHNG).

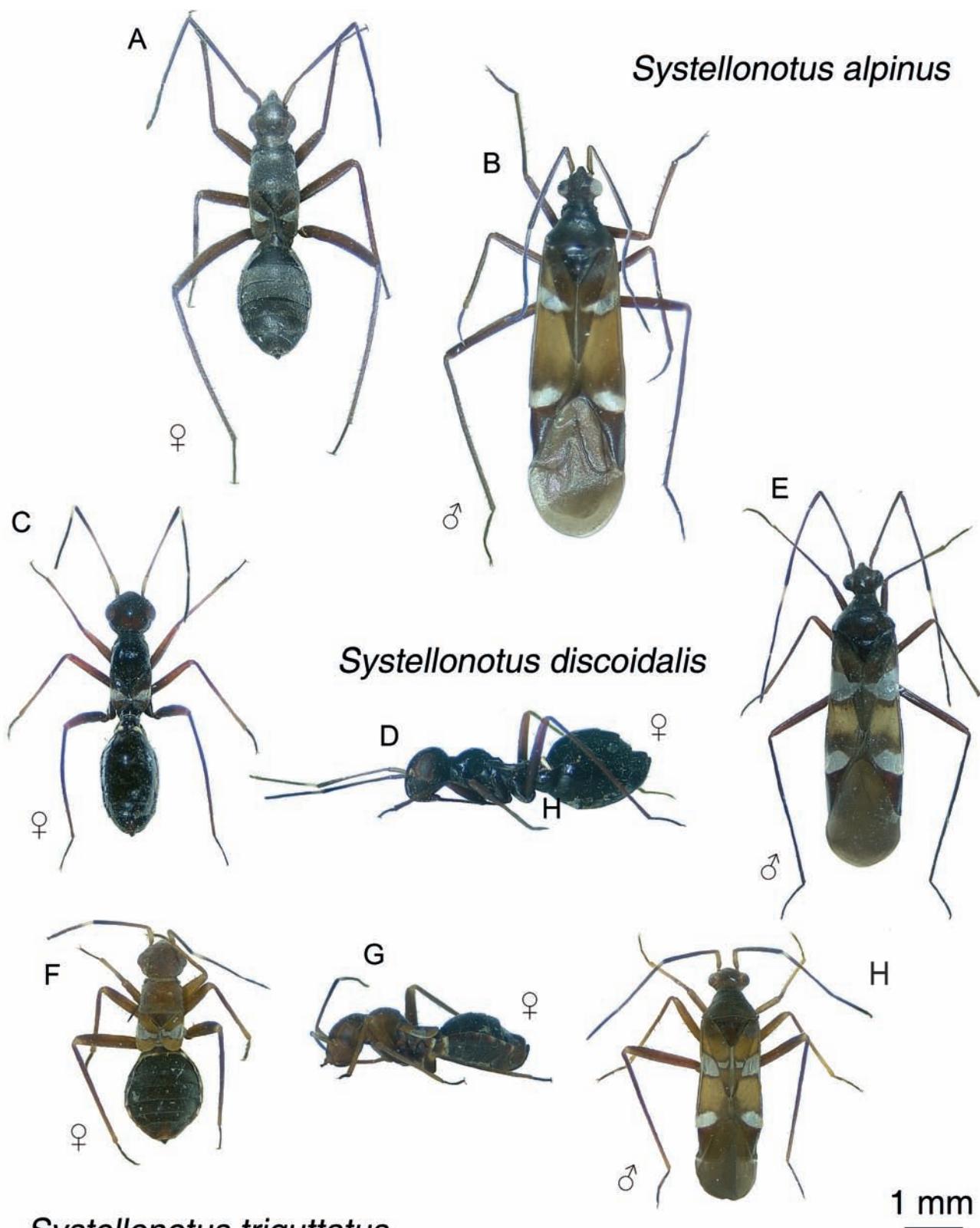
***Omphalonotus quadriguttatus* (KIRSCHBAUM 1856) (Figs 1N, 1O, 1P, 4C)**

Diagnosis: Female, as well as male, macropterous or brachypterous; hemelytra black with ivory spots apically and basally (Figs 1N, 1O, 1P); pronotum campanulate, dark-brown and with distinctly swollen calli; cuneus red-brown; membrane with pale roundish spot laterally; sclerotized rings of dorsal labiate plate roundish; dorsal labiate plate sclerotized laterally (Fig. 4C); ventral sack lunate, voluminous (Fig. 4C); posterior wall with bifurcate interramal sclerite and medially with spinose field on surface. Recognized by its campanulate pronotum and swollen calli, hemelytra coloration (Figs 1N, 1O, 1P) and further by the roundish sclerotized rings on the dorsal labiate plate (Fig. 4C).

Material: **Germany:** Bamberg, Pettstadt, 2.vi.1963, leg. Eckerlein, 1♀ (MHNG). **Moravia:** 22.vi.1976, Nová Ves Oslavean, 218-315 m, 1♀, leg. P. Lauterer (NNMC); Šakvice, step, 180 m, 27.viii.1973, leg. Pospíšilová, 1♀ (NNMC). Hodonín, Ratš'kvice, 207-216m, 1.vii.1974, leg. Pospíšilová, 1♀ (NNMC). Mušov, sev. Obce, 170m, 3.ix.1973, leg. J.L. Stehlík, 2♀ (NNMC). Milotice, Náklo step na spraši, 24.vi.1974, leg. Pospíšilová, 1♀ (NNMC). Šakvice, jv. Obce, 170-180m, 22.vii.1974, leg. J.L. Stehlík, 1♀, (NNMC). Ivančice-Letkovic, 15.ix.1965, leg. Pospíšilová, 1♀ (NNMC). Vevčice, 17.vii.1963, leg. J.L. Stehlík, 1♀ (NNMC). **Slovakia:** Horné Príbelce, okolí hřbitova, 300-350m, 24.viii.1988, leg. J.L. Stehlík, 2♀ (NNMC). Marceklová, Bošov. Kopec, 120m, 5.ix.1989, 1♀, 6.ix.1989, 1♀, leg. J.L. Stehlík (NNMC). Nitra, Kalvaria, 22.viii.1966, leg. J.L. Stehlík, 1♀ (NNMC). **Switzerland:** Wallis, Sierre, 3.x.1948, leg. J.P. Wolf, 1♀ (ETHZ).

***Systellonotus alpinus* FREY-GEßNER 1871 (Figs 2A, 2B, 4D)**

Diagnosis: Female brachypterous, strikingly ant-like, male macropterous; hemelytra in females dark-brown with pale transverse band medially, apically with diffuse orange spot (Fig. 2A); hemelytra in males brownish with indistinct transverse orange band medially, narrow transverse pale bands apically and basally (Fig. 2B); cuneus red-brown; sclerotized rings of dorsal labiate plate rounded and auricle-like apically (Fig. 4D, arrow); ventral sack elongate vertically; posterior wall with bifurcate interramal sclerite and medially with spinose field on sur-



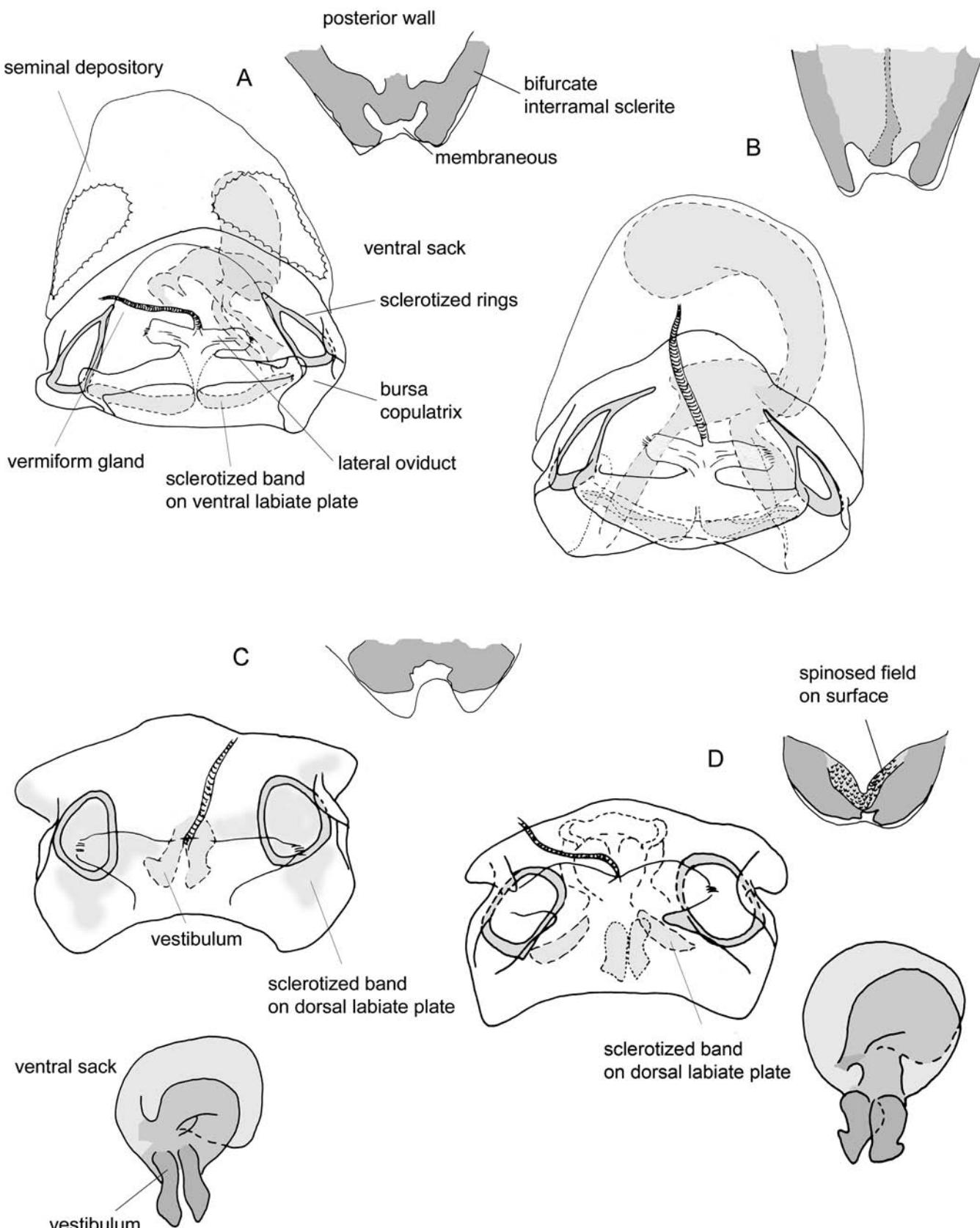
### *Systellonotus triguttatus*

**Fig. 2:** Females (left dorsal view, middle lateral view) and males of the Central European Hallodapini species; scale bar = 1 mm.

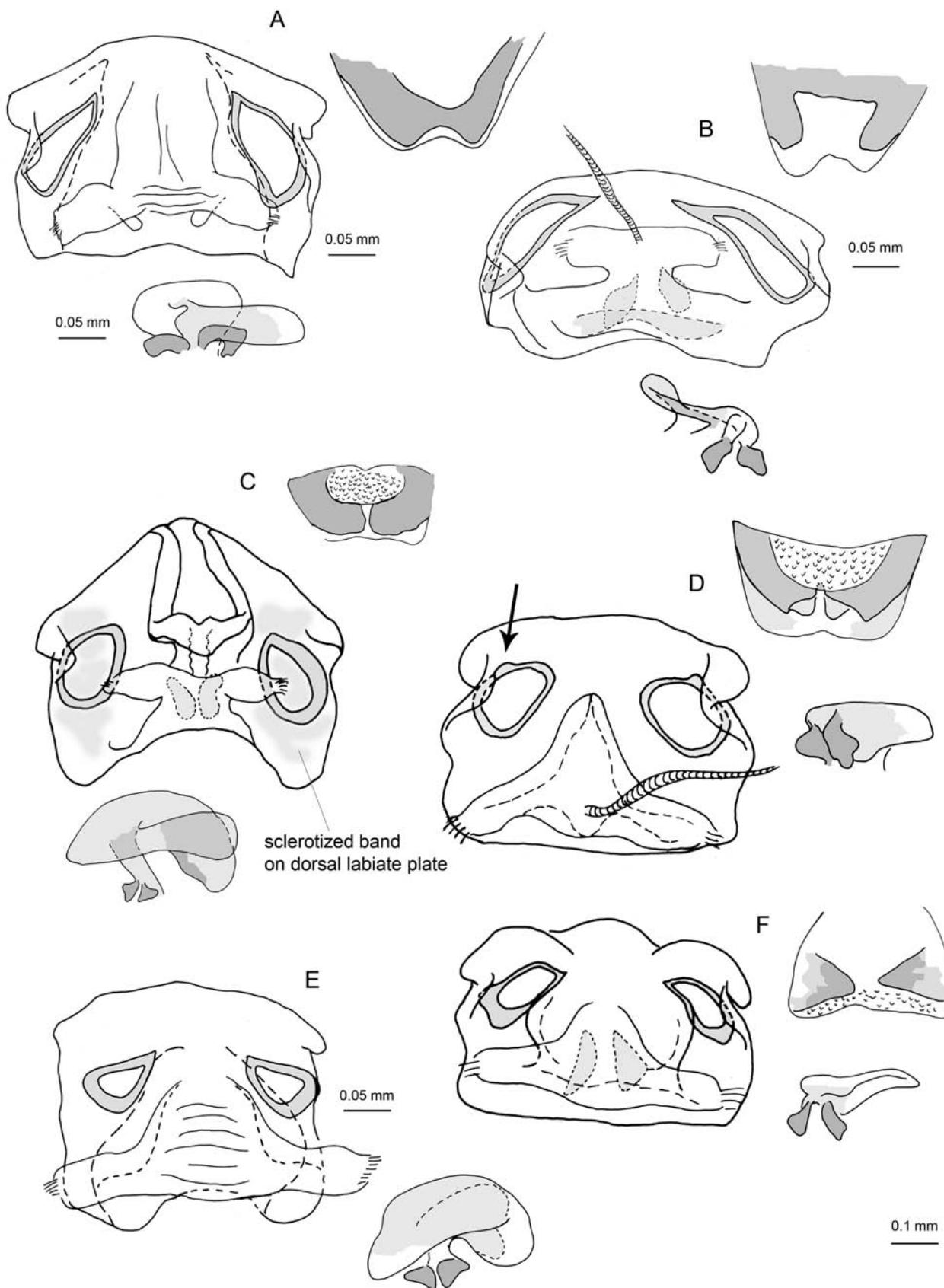
face. Similar to *S. discoidalis* (Figs 2C, 2D, 2E) in coloration and size, but males of *S. alpinus* distinguished by transverse orange band of hemelytra not as distinct (Fig. 2B) as in *S. discoidalis* (Fig. 2E), and females by

sclerotized rings of dorsal labiate plate auri-  
cle-like apically (Fig. 4D, arrow).

HOLLIER (2004) designated a female lec-  
totype in the material of Frey-Gessner found  
in the collection of the MHNG.



**Fig. 3:** Female genitalia (dorsal view) with posterior wall, ventral sack (ventral view) and vestibulum (ventral view). **(A)** *Cremonocephalus albolineatus*; **(B)** *C. alpestris*; **(C)** *Hallopodus montandoni*; **(D)** *H. rufescens*; scale bar 0.1 mm unless stated otherwise.



**Fig. 4:** Female genitalia (dorsal view) with posterior wall, ventral sack (ventral view) and vestibulum (ventral view). **(A)** *Hallobapus suturalis*; **(B)** *Mimocoris rugicollis*; **(C)** *Omphalonotus quadriguttatus*; **(D)** *Systellonotus alpinus*; **(E)** *Systellonotus discoidalis*; **(F)** *Systellonotus triguttatus*; scale bar 0.1 mm unless stated otherwise.

Material: **France:** Ballia or. Deo. Vaucluse, Mont Ventoux, 1600-1800m, 11.viii.1962, 1♂, leg. W. Heinz (MHNG). **Italy:** Piemont, Val d'Aosta, St. Barthelemy-Praz, 1800m, 15.x.1972, leg. A. Focarile, 1♀ (MHNG).

***Systellonotus discoidalis* HORVÁTH 1894**  
(Figs 2C, 2D, 2E, 4E)

Diagnosis: Female brachypterous, strikingly ant-like, male macropterous. Most similar in size and coloration to *S. alpinus* (Figs 2A, 2B), but general aspect of *S. discoidalis* (Figs 2C, 2D, 2E) more shining than *S. alpinus*. Males further distinguished from *S. alpinus* by transverse orange band of hemelytra distinct (Fig. 2E), females by head more rounded as in *S. alpinus* and sclerotized rings of dorsal labiate plate more triangular (Fig. 4E) as in *S. alpinus*, where the sclerotized rings of dorsal labiate plate are roundish and auricle-like apically (Fig. 4D, arrow).

Material: **Russia:** Kotsch-Agatsch, Altai, 19.vi.1964, 1♂, 5.vii.1964, 3♀, leg. Kerjner (MHNG).

***Systellonotus triguttatus* (LINNAEUS 1767)** (Figs 2F, 2G, 2H, 4F)

Diagnosis: Female brachypterous, strikingly ant-like, male macropterous. In female and male head and pronotum orange-brown. Hemelytra in females orange-brown with pale transverse band medially (Fig. 2F); hemelytra in males pale brown or orange-brown with transverse pale bands apically and basally (Fig. 2H); cuneus reddish; lunate transverse band of clavus not as wide as transverse band of hemelytra (Fig. 2H); sclerotized rings of dorsal labiate plate triangular, pointed apically (Fig. 4F); ventral sack vertically elongate; posterior wall with sclerotized triangular plates laterally (Fig. 4F). Most similar to *S. alpinus* (Figs 2A, 2B) and *S. discoidalis* (Figs 2C, 2D, 2E), but distinguished by its paler hemelytra coloration (Figs 2F, 2H) and by posterior wall of female genitalia with triangular plates laterally (Fig. 4F).

Material: **Bulgaria:** Mouth of Ropotamo river, Arkutino, 12.vii.1973, 1-10m, leg. P. Lauterer, 5♀ (NNMC). **Germany:** Fr. Jura, Staffelstein, 6.vii.1957, leg. Eckerlein, 4♀ (MHNG); Coburg, 3.vi.1955, leg. Eckerlein, 4♀ (MHNG). **Moravia:** Brno-Kamenný kopec, 18.v.1976, 350m, leg. L. Pospíšilová, 4♂ (NNMC). Biskoupky, Biskoupský kopec, 29.vi.1976, leg.

Pospíšilová, 4♀ (NNMC). Brno-Hády, step na vyvřeline, 340-380m, 6.viii.1975, leg. P. Lauterer, 9♀, 2♂ (NNMC). Bedřichovice, step, 280m, 20.v.1976, leg. J.L. Stehlík, 5♂, 4♀ (NNMC). **Slovakia:** Bojnice, 550m, 1975, leg. M. Dočekalová, 1♂ (NNMC). Chočské pohorie Prosiek, 750m, 13.vi.1971, leg. J.L. Stehlík, 1♂ (NNMC). Hornádská kotlina Spišské Podhradie, 11.vi.1971, leg. J.L. Stehlík, 9♂, 1♀ (NNMC). Šakvice, step, 180m, 4.vii.1973, leg. J.L. Stehlík, 1♀ (NNMC).

## Acknowledgements

For material I am thankful to following people and institutions: Andreas Müller (ETHZ); Igor Malenovský (NNMC, Moravian Museum, Brno, Czech Republic); Peter Schwendinger and John Hollier (MHNG, Muséum d'histoire naturelle, Genève, Switzerland). For the help in taking the habitus pictures I am very grateful to Michael KnapPERTSBUSCH and Kevin R. Brown (NHMB). For helpful comments on the manuscript I want to thank Daniel Burckhardt (NHMB), Michael D. Schwartz (CNC, Canadian National Collection of Insects, Agriculture and Agri-Food Canada, Ottawa) and Wolfgang Rabitsch (Austrian Federal Environment Agency, Vienna).

## Zusammenfassung

Die Tribus Hallopapini (Miridae, Phylinae) besteht aus 49 Gattungen mit einem Verbreitungsschwerpunkt in der Alten Welt. In Mitteleuropa sind zehn Arten nachgewiesen. Eine Vielzahl der Hallopapini Weibchen ist brachypter und oftmals auffallend myrmekomorph. Eine weitere Besonderheit der Hallopapini Weibchen ist der sogenannte ventrale Sack der Bursa copulatrix (sensu Ehanno). Dieser ventrale Sack stellt eine Erweiterung des Vestibulum dar. Alle Weibchen der zehn mitteleuropäischen Hallopapini Arten weisen einen leicht erkennbaren ventralen Sack auf. *Cremnocephalus albolineatus* REUTER 1875 und *C. alpestris* WAGNER 1941 fallen unter den zehn untersuchten Hallopapini Arten durch ihren jeweils besonders voluminösen ventralen Sack auf. Der ventrale Sack der weiblichen Genitalien zeigt innerhalb der Hallopapini eine große Variabilität in Größe und Form, und kann als artspezifisches Merkmal zur Arterkennung verwendet werden.

## References

DUPUIS C. (1963): Progrès récents de l'étude des genitalia des Hétéroptères. — Muséum d'histoire Naturelle , Paris, 1-100.

EHANNO B. (1990): Complément à la faune de France des Hétéroptères Miridae HAHN, 1831 – III – Hallopinae Van Duzee 1916. — Bull. Soc. Sci. Bretagne **61**: 57-100.

GÜNTHER H. & G. SCHUSTER (2000): Verzeichnis der Wanzen Mitteleuropas (Insecta: Heteroptera). — Mitt. Int. Ent. Ver. e.V. Suppl. **7**: 1-69.

HOLLIER J. (2004): Notes sur quelques Hemiptera suisse du Muséum d'histoire naturelle de Genève. — Bull. Rom. Ent. **22**: 53-56.

LINNAURO R.E. (1996): Miridae of West and Central Africa (Hemiptera, Heteroptera). — Acta Zool. Fennica **202**: 1-84.

MAGNIEN P. (2000): Révision du genre *Cremnocephalus* FIEBER, 1860; description de deux nouvelles espèces du sud de la France et de Calabre; note sur les genitalia femelle (Heteroptera, Miridae). — Nouv. Revue Ent. (N.S.) **17**: 51-67.

RIEGER C. (1983): Ein neuer *Cremnocephalus* aus Griechenland (Heteroptera, Miridae). — Nachrbl. Bayer. Entomol. **32**: 75-77.

SCHUH R.T. (1974): The Orthotylinae and Phylinae (Hemiptera: Miridae) of South Africa with a phylogenetic analysis of the ant-mimetic tribes of the two subfamilies for the world. — Entomol. Am. **47**: 1-332.

SCHUH R.T. (1984): Revision of the Phylinae (Hemiptera, Miridae) of the Indo-Pacific. — Bull. Am. Mus. Nat. Hist. **177**: 1-476.

WAGNER E. (1941): *Cremnocephalus alpestris* sp.nov., eine neue deutsche Miridenart (Hemipt. Heteropt.). — Mitt. Deut. Entomol. Ges. **10**: 99-103.

WAGNER E. (1948): Two new species of Miridae, (Hem. Het.) from South France. — Entomol. Mon. Mag. **84**: 1-5.

WAGNER E. (1974): Die Miridae HAHN, 1831, des Mittelmeerraumes und der Makaronischen Inseln (Hemiptera, Heteroptera), Teil 2. — Entomol. Abh. **39**, Suppl.: i-ii, 1-421.

WYNIGER D. (2006): The Central European Hallopinae (Insecta: Heteroptera: Miridae: Phylinae). — Russ. Entomol. J.: in press.

## Address of the Author:

Dr. Denise WYNIGER  
Natur-Museum Luzern  
Entomologie  
Kasernenplatz 6  
CH-6003 Luzern, Switzerland  
E-Mail: Denise.Wyniger@lu.ch